New Concepts of Sterile Conditions in the Operating Room

There has always been great concern to reduce the bacterial count in the operating room and thus minimize infections arising from surgical procedures. Recently there has been an increase of interest in this idea, mainly stimulated by Charnley's work at Wrightington Hospital, England, in which he uses a total hip replacement and methylmethacrylate. Initially when this operation was done, the infection rate was fairly high. The results of such infection were often disastrous due to the extensive amount of foreign material utilized. Charnley developed a "green room" in which filtered air at great velocity was run through the operating suite. The theory proposed was that the clean air would wash out the particles on which pathogenic bacteria rest.

The need for clean rooms that developed in the course of the aerospace program led to the production of special filters and technologic advances which show promise in helping to reduce the level of infection in operating suites.

A great deal of salesmanship and sales promotion has accompanied the introduction of the new laminar air flow units. There are great differences of opinion about various factors in these units—the type of laminar air flow (whether it is horizontal or vertical), the total operating room garb for the surgeon and other personnel, and whether or not large amounts of suction should be used.

Undoubtedly microbiologists will assume a major role in planning and developing better operating room conditions for the future.

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Unstable Knee

In 1950, the concept of early repair of acute ligamentous injuries of the knee was put forth. This principle has become well established in the two decades since then. In 1966, further guidelines were provided by a systematic classification of ligamentous sprains based on degree of severity.

Surgical intervention is indicated for "severe" sprains with complete disruption of continuity and instability (Group III). Protection for several weeks is indicated for the "moderate" sprains with partial tearing and no instability (Group II). Symptomatic treatment is indicated for the "mild" sprains with minimal tearing and no instability (Group I).

The combination of early definitive diagnosis and expeditious definitive treatment insures the most optimal results and the most rapid return to previous activity.

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Ambulatory Treatment of Legg-Calves-Perthes Syndrome

The aim of treatment in the Legg-Calves-Perthes Syndrome is the prevention of deformity of the femoral head. It is now generally accepted that positioning the affected hip in abduction and internal rotation, combined with an aggressive exercise program, most effectively accomplishes this goal. This position best contains the femoral head (particularly the involved anterior portion) within the acetabulum and allows reconstitution of a spherical head with the least residual deformity.

An excellent guideline during treatment is observation of the degree of subluxation of the femoral head from the medial wall of the acetabulum (increased femur-teardrop distance as seen on antero-posterior x-ray films). If the femur-teardrop distance is increased, a concentric articulation of the femoral head and acetabulum cannot exist unless deformity of the femoral head is present. Therefore, early reduction of the femur-teardrop distance to normal (1.0 cm or less) and maintenance of the reduction is a major treatment objective.

It is now recognized that most children under five years old require no treatment other than restriction of activities and careful observation, as significant subluxation rarely occurs and the healing process is rapid (particularly in the cases with partial head involvement).

Treatment is indicated for older children or those with significant subluxation, where the desired position of abduction and internal rotation is probably best achieved and maintained by bilateral leg casts and crossbar as advocated by Craig, Petrie, Harrison, and others; but a variety of braces have also been used (generally less effectively). A child may safely weight-bear without increasing deformity of the head when no subluxation is present (normal femur-teardrop distance), and there is reossification of the posterior portion of the epiphysis (seen on the frog lateral view). Maintenance of this position will commonly be required for two years or longer, to allow adequate healing of the epiphysis.

In recent years, surgical operations such as femoral or iliac osteotomy have been used successfully to improve the prognosis and shorten the treatment time in the older child. When an optimum result is desired in a hip with persistent subluxation or considerable enlargement of the femoral head, consideration should be given to referral for evaluation for such surgical treatment.

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Recent Advances in the Treatment of Arthritis of the Knee

Definite relief of pain has been shown after corrective osteotomy in patients with arthritis in one compartment of the knee. Recently reported series corroborate earlier reports that the majority of patients with painful arthritic knees and narrowing of either compartment could obtain long-term benefit by restoring alignment and balancing the weight-bearing forces to the more normal side.

The operation is indicated when adequate conservative measures fail to control the progression of the disease, particularly in patients with degenerative joint disease but also in selected cases of rheumatoid knee. Poor results occurred with unstable knees and advanced generalized knee arthritis. The procedure is technically not difficult, the complication rate is low, and loss of motion or delayed union was not a problem.

Early osteotomy has benefited the patient in most instances and does not foreclose opportunity for future arthroplasty when suitable endoprostheses become available.

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Treatment of Fractures of the Leg by Modified Casting and Early Weight-Bearing

A healing wound requires stress for the proper deposition of collagen—be it a laceration, hernia repair, or fractured bone. Lower extremity fractures and their associated soft tissue injuries heal best when subjected to early weight-bearing within physiological limits. Fractures of the tibia are treated by applying a snug, well molded long leg cast with the knee in extension, and then encouragement of progressive weight-bearing. After femoral shaft fractures are healed sufficiently in traction so they no longer displace, a cast brace consisting of open ended quadrilateral socket and knee joints fixed in plaster is fitted and progressive weight-bearing is then begun.

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